Proposed Amended Claims - For Discussion Purposes Only

1. (Currently Amended) A method [[for]] of equalizing output signals from a plurality of signal paths, the method comprising of:

(a) identifying a transfer function of the signal path including a microphone for each of the signal paths;

(b) based on ~~the transfer function~~ a single selected function, determining a filtering function for each signal path such that a product of the transfer function and the filtering function is [[a]] the selected function; and

(c) applying the filtering function to the corresponding signal path, thereby correcting the transfer function of the signal path to the selected function ~~to equalize~~, whereby the output signals from the signal paths are substantially equal with respect to phase or phase and magnitude.

2. (Original) A method according to claim 1, wherein said selected function is the transfer function for one of said plurality of signal paths.

3. (Original) A method according to claim 1, wherein said filtering function is determined such that a product of the transfer function and the filtering function is a selected common factor.

4. (Currently Amended) A method according to claim 1, wherein said step of applying each filtering function comprises steps of:

(a) providing a filter [[means]] to the signal path; and

(b) applying the filtering function to the filter [[means]] of its corresponding signal path, thereby equalizing output signals from the filter [[means]] of the signal paths.

5. (Currently Amended) A method according to claim 1, wherein said step of identifying a transfer function comprises steps of:

(a) providing a sample signal to the signal path to produce a sample output signal through the signal path; and

(b) processing the sample signal and the sample output signal to identify the transfer function [[for]] of its corresponding signal path.

6. (Currently Amended) A method according to claim 1, wherein said signal path comprises [[(a)]] [[a]] the microphone for converting a sound signal to an electrical analog signal; and [[(b)]] an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal, wherein said step of identifying a transfer function comprises steps of:

(a) providing a noise sample to the microphone to produce a sample output signal through the signal path; and

(b) processing the noise sample and the sample output signal to identify the transfer function of its corresponding signal path.

7. (Currently Amended) A method according to claim 1, wherein said signal path comprises [[(a)]] [[a]] the microphone for converting a sound signal to an electrical analog signal; and [[(b)]] an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal, wherein said step of identifying a transfer function comprises steps of:

(a) acoustically providing a noise sample to the microphone with a propagation time delay to produce a first output processed through the signal path;

(b) providing a second output corresponding to the noise sample with the propagation time delay; and

(c) processing the first output and the second output to identify the transfer function of its corresponding signal path.

8. (Original) A method according to claim 7, wherein said step of providing the noise sample comprises steps of:

(a) providing a first digital noise signal, and

(b) converting the first digital noise signal into said noise sample.

9. (Original) A method according to claim 8, wherein said step of providing a second output comprises steps of:

(a) providing a second digital noise signal, the second digital noise signal being synchronized with said first digital noise signal and having properties corresponding to said first digital noise signal;

(b) delaying the second digital noise signal by same amount of time as said propagation delay time; and

(c) compensating the conversion factor of said first digital noise signal into said noise sample.

10. (Currently Amended) A method according to claim 6, wherein said transfer function of the signal path [[may be]] is a transfer function of said microphone.

11. (Original) A method according to claim 7, wherein said propagation delay time (T) is selected to be integer multiple of said noise sample.

12. (Original) A method according to claim 8, wherein said first digital noise signal is provided by a maximum length sequence generator.

13. (Original) A method according to claim 9, wherein said second digital noise signal is provided by a maximum length sequence generator.

14. (Original) A method according to claim 9, wherein said first and second noise signal comprise a white noise signal.

15. (Original) A method according to claim 9, wherein said first and second noise signal comprise a random noise signal.

16. (Currently Amended) An apparatus for equalizing output signals from a plurality of signal paths, the apparatus comprising:

(a) means for identifying a transfer function of the signal path including a microphone for each of the signal paths;

(b) means for determining, based on ~~the transfer function~~ a single selected function, a filtering function for each signal path such that a product of the transfer function and the filtering function is [[a]] the selected function; and

(c) means for applying the filtering function to the corresponding signal path, thereby correcting the transfer function of the signal path to the selected function ~~to equalize~~, whereby the output signals from the signal paths are substantially equal with respect to phase or

magnitude and phase.

17. (Original) An apparatus according to claim 16, wherein said selected function is the transfer function for one of the signal paths.

18. (Original) An apparatus according to claim 16, wherein said filtering function is determined such that a product of the transfer function and the filtering function is a common factor.

19. (Currently Amended) An apparatus according to claim 16, wherein said filtering function applying means comprises:

(a) a filter [[means]] provided to the signal path; and

(b) means for applying the filtering function to the filter [[means]] of its corresponding signal path, thereby equalizing output signals from the filter [[means]] of the signal paths.

20. (Currently Amended) An apparatus according to claim 16, wherein said transfer function identifying means comprises:

(a) means for providing a sample signal to the signal path to produce a sample output signal through the signal path; and

(b) means for processing the sample signal and the sample output signal to identify the transfer function [[for]] of its corresponding signal path.

21. (Currently Amended) An apparatus according to claim 16, wherein said signal path comprises [[(a)]] [[a]] the microphone for converting a sound signal to an electrical analog signal; and [[(b)]] an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal, wherein said transfer function identifying means comprises:

(a) means for providing a noise sample to the microphone to produce a sample output signal through the signal path; and

(b) means for processing the noise sample and the sample output signal to identify the transfer function of its corresponding signal path.

22. (Currently Amended) An apparatus according to claim 16, wherein said signal

path comprises [[(a)]] [[a]] the microphone for converting a sound signal to an electrical analog signal; and [[(b)]] an analog-to-digital converter coupled to the microphone for converting the electrical analog signal into a digital signal, wherein said transfer function identifying means comprises:

(a) means for acoustically providing a noise sample to the microphone with a propagation time delay to produce a first output processed through the signal path;

(b) means for providing a second output corresponding to the noise sample with the propagation time delay; and

[[(e)]] (c) means for processing the first output and the second output to identify the transfer function of its corresponding signal path.

23. (Currently Amended) An apparatus according to claim 22, wherein said noise sample providing means comprises:

(a) [[means]] a first noise generator for generating a first noise signal; and

(b) means for converting the first digital noise signal into said noise sample.

24. (Currently Amended) An apparatus according to claim 23, wherein said a second output providing means comprises:

(a) [[means]] a second noise generator for generating a second digital noise signal, the second digital noise signal being synchronized with said first digital noise signal and having properties corresponding to said first digital noise signal;

(b) means for delaying the second digital noise signal by same amount of time as said propagation delay time; and

(c) means for compensating the conversion factor of said first digital noise signal into said noise sample.

25. (Original) An apparatus according to claim 23, wherein said first digital noise signal providing means is a maximum length sequence generator.

26. (Original) An apparatus according to claim 23, wherein said converting means includes a digital-to-analog converter and a loud speaker.

27. (Original) An apparatus according to claim 24, wherein said second digital

noise providing means includes a maximum length sequence generator.

28. (Original) An apparatus according to claim 21, wherein said transfer function of the signal path is a transfer function of said microphone.

29. (Original) An apparatus according to claim 22, wherein said propagation delay time is selected to be integer multiple of said first noise sample.

30. (Original) An apparatus according to claim 24, wherein said first and second digital noise signals are a white noise signal.

31. (Original) An apparatus according to claim 24, wherein said first and second digital noise signals are a random noise signal.

32. (Original) An apparatus according to claim 24, wherein said first and second digital noise signal are provided by a single source.

33. (Original) A listening device using a method according to claim 1.

34. (Original) A hearing aid using a method according to claim 1.

35. (Original) A headset using a method according to claim 1.

36. (Original) A listening device comprising an apparatus according to claim 16.

37. (Original) A hearing aid comprising an apparatus according to claim 16.

38. (Original) A headset comprising an apparatus according to claim 16.

39. (Original) A listening device comprising a signal equalization filter, wherein the function of the filter is determined by a method according to claim 1.

40. (Original) A hearing aid comprising a signal equalization filter, wherein the

function of the filter is determined by a method according to claim 1.

41. (Original) A headset comprising a signal equalization filter, wherein the function of the filter is determined by a method according to claim 1.

42. (Currently Amended) A method [[for]] of correcting transfer functions of a plurality of signal paths, the method comprising steps of:

(a) identifying a transfer function of the signal path including a microphone for each of the signal paths;

(b) determining, based on ~~the transfer function~~ a single selected function, a filtering function for each signal path such that a product of the transfer function and the filtering function is [[a]] the selected function; and

(c) applying the filtering function to the corresponding signal path~~, thereby correcting the transfer function of the signal path to the selected function~~, whereby the outputs of the signal paths are substantially equal with respect to phase or phase and magnitude.

43. (Currently Amended) An apparatus for equalizing output signals from a plurality of signal paths, the apparatus comprising:

(a) an identification circuit for identifying a transfer function of the signal path including a microphone for each of the signal paths;

(b) a determination circuit for determining, based on ~~the transfer function~~ a single selected function, a filtering function for each signal path such that a product of the transfer function and the filtering function is [[a]] the selected function; and

(c) a filter for applying the filtering function to the corresponding signal path thereby correcting the transfer function of the signal path to the selected function ~~to equalize~~, whereby the output signals from the signal paths are substantially equal with respect to phase or phase and magnitude.